Abstract

Quantitative analysis speed can be increased at least four-fold via use of liquid phase flow segmentation. An analysis device such as a mass spectrometer 40 is supplied with a single continuous stream 100 consisting of individual segments made from four different chromatographic or flow injection testing streams by use of a timed valve or injector 10. The stream is formed of solution segments A-D of the different compounds, with the compound solution segments being separated by known fluid or solvent segments S. The nature of the individual solution segments is controlled by a high pressure valve which comprises correlated timing elements and selection elements for determining which compounds are being directed to the analysis device at any given time, for correlation to separate analysis results. The selection elements are, for example, perforations 1-5 in a rotating disc which are selectively aligned for a software-specified time, with stream sources of the different compounds and a conduit 21 leading to the analysis device or directly thereto. A time correlated read-out matches results with specific compounds. Throughput of compounds for testing is multiplied to the physical handling limits of the analysis device. For current mass spectrometers, at least four fold over conventional methods.